

## **.DETAILED ACTION**

### ***Summary***

1. This is the initial Office Action based on the ELLIS et al. application filed with the Office on April 13, 2004, and response to restriction requirement filed with the Office on November 15, 2007.

### ***Election/Restrictions***

2. Applicant's election without traverse of Claims 1-13 in the reply filed on November 15, 2007 is acknowledged.
3. Claims 14-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

### ***Drawings***

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because (A) they include the following reference character(s) not mentioned in the description: Element 31 in Figure 1 and, (B) because they do not include the following reference sign(s) mentioned in the description: a precision diluter **27** on page 4, line 23. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top

margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites in part ". . . said thermoelectric cooling unit comprises an access door . . ." which is interpreted as written that an access door makes up in part the thermoelectric cooling unit. However, this is contradicted by Figures 4 and 5, wherein is shown that the thermoelectric cooling unit (element 36) is on the opposite side of the claimed temperature-controlled unit (element 100) from the access door (element 42). No other embodiment within any part of the application describes, explicitly or implicitly, that the thermoelectric cooling unit comprises the access door. It would seem, according to the disclosure of the application, that the portion of Claim 4 is meant to read in part, ". . . said temperature-controlled sensor comprises an access door . . . " Notwithstanding a statement to the contrary, this is the interpretation used for examination purposes.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 5 – 9, 12, and 13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by “Continuous Emissions Monitoring FAG II” Production Sheet (herein after referred to as “PRODUCT SHEET”) published October 2002 by Land Instruments International, obtained via website, [http://www.cmc-instruments.de/analyzers\\_combustion\\_env\\_sys.php?language=en](http://www.cmc-instruments.de/analyzers_combustion_env_sys.php?language=en).

The PRODUCT SHEET discloses a continuous emissions monitor utilizing an advanced dual sensor technology to measure specific flue gas components (page 2, first sentence). The PRODUCT SHEET includes a system comprised of a temperature-controlled sensor module (element 7 of illustration on page 6), at least two electrochemical sensors for measuring concentration of a predetermined component gas that are disposed within the temperature-controlled sensor module (“Advanced Dual Sensor Technology” section on page 4, and “dual sensor pair” elements 8-10 of illustration on page 6), which are limitations recited in Claims 1 and 9 of the instant application. Additionally, the PRODUCT SHEET includes within the system, valves for directing the flow of flue gas and air to the aforementioned electrochemical sensors (six unlabelled elements with in air and gas lines of illustration on page 6) and a controller

(“Sample Gas Management” section on page 5) that alternately exposes flue gas and air to an electrochemical sensor for component gas measurement being exposed to flue gas and recalibration of another like electrochemical sensor being exposed to air (“How the analyzer system works” section at the top of page 6), which are limitations recited in Claims 1 and 9 of the instant application.

The PRODUCT SHEET also discloses use of gas sensors for CO, NO, NO<sub>2</sub>, SO<sub>2</sub>, and CO<sub>2</sub> that ranges from 0 – 10 ppm up to 0 – 10000 ppm with 0.1 ppm resolution (“Measurement Ranges” in Specifications on page 7), which are limitations recited in Claims 5, 6, 12, and 13 of the instant application.

The PRODUCT SHEET teaches that the analyzer accurately controls the flow rate and pressure of the sample gas manifold, exposing each sensor to alternately sample gas from the flue and air. This causes the sensors to generate an electrical output in proportion to the specific gas component, and a microprocessor reads the sensor generated voltage and converts it to a concentration displayed on an LCD (“How the analyzer system works” section at the top of page 6). Additionally, it is recited in the PRODUCT SHEET that an automatic zero drift correction is performed every 30 minutes and a measurement verification is performed during the drift correction cycle (“ADST – latest technology” section on page 6). These limitations are recited in Claim 7 of the instant application. The PRODUCT SHEET includes the system also is comprised of a “Warning” relay (“Outputs/Inputs” in Specifications on page 7) which can provide a means of alert if two outputs differ from each other by a

predetermined amount. This feature is operational as the PRODUCT SHEET also teaches that modules are routinely checked by the control system to ensure complete system integrity ("Modular Design" section on page 4). This is a limitation recited in Claim 8 of the instant application.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 2 – 4, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Continuous Emissions Monitoring FAG II" Production Sheet (herein after referred to as "PRODUCT SHEET"), in view of Technical Bulletin: Advanced Dual Sensor Technology (ADST) (herein after referred to as

“BULLETIN”) published October 2002 by Land Instruments International, obtained via website <http://www.landinstruments.net/combustion/downloads/index.htm>.

The PRODUCT SHEET teaches the limitations of Claims 1, 5-9, 12, and 13 as recited above in the 102 rejection.

The PRODUCT SHEET does not teach that the temperature within the temperature-controlled sensor module is maintained by a thermoelectric heating/cooling unit, or that the thermoelectric unit maintains a flow of dry air to evaporate any condensation formed on the sensors.

However, the BULLETIN discloses the specific operation of Advanced Dual Sensor Technology, wherein is taught that the operating temperature of the sensor module is controlled by a thermoelectric heating and cooling unit (first and second sentences of page 2), which is a limitation recited in Claims 2 and 10 of the instant application. Additionally, the BULLETIN teaches that the problem of condensation from the environment that would affect the sensor when the access door is open is overcome by continuously purging the sensor unit with clean dry air. The PRODUCT SHEET recites the system operates without need for air conditioning (“Operating Environment” section on page 5), therefore it can be taken that the clean, dry purging air must come from the included thermoelectric unit, which is a limitation recited in Claim 4. At the time of the present invention, it is obvious to one skilled in the art that since the description of the “Advanced Dual Sensor Technology” component in the PRODUCT SHEET is “housed in an environmentally-controlled enclosure” (third sentence, “Advanced Dual Sensor

Technology” section on page 4) that the thermoelectric heating and cooling unit described in the BULLETIN is the device which controls the environment of the “Advanced Dual Sensor Technology” component.

The PRODUCT SHEET additionally teaches an standard operating temperature between  $-40$  to  $+40$  °C (“Environmental” in Specification on page 7), that covers the range between  $30$  and  $40$  °C, which is a limitation recited in Claims 3 and 11 of the instant application. The PRODUCT SHEET also teaches a swing-frame mechanism to access the system components that is an access door, which is a limitation recited in Claim 4 of the instant application.

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Christopher Ball whose telephone number is (571) 270-5119. The examiner can normally be reached on Monday through Thursday, 8:00 am to 5:00 pm (EDT).

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Barbara Gilliam can be reached on (571) 272-1330. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 4128

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCB

11/28/2007

//Barbara L. Gilliam//

Supervisory Patent Examiner, Art Unit 4128